



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

$$\tan \theta = \frac{y}{x-c}, \cot \theta = \frac{v}{u-c}, \therefore \frac{y}{x-c} = \frac{u-c}{v}. \therefore yv = (x-c)(u-c) \dots \dots \dots (4.)$$

$$(2) \text{ and } (3) \text{ in } (1) \text{ and } (4) \text{ gives, } 2c(x-u) = a^2 - b^2, \dots \dots \dots (5),$$

$$(a^2 - x^2)(b^2 - u^2) = (x-c)^2(u-c)^2 \dots \dots \dots (6). \quad (5) \text{ in } (6) \text{ gives}$$

$$\{4a^2c^2 - (a^2 - b^2)^2 - 4cu(a^2 - b^2) - 4c^2u^2\} (b^2 - u^2) = (a^2 - b^2 + 2uc - 2c^2)(u-c)^2.$$

$$\therefore (74175 - 520u - 16u^2)(3600 - u^2) - (4u - 95)^2(u - 40)^2.$$

$$\therefore 32u^3 - 2840u^2 + 825u + 3157375 = 0. \quad \text{Let } u = z + \frac{3.55}{19}.$$

$$\therefore z^3 - 24\frac{25}{8}z + 1\frac{54675}{3456} = 0.$$

This equation has three roots.

$$\therefore z_1 = 23.02208, z_2 = 36.23197, z_3 = -58.43863.$$

$$\therefore u_1 = 52.60541, u_2 = 65.81530, u_3 = -28.85530.$$

$$\therefore x_1 = 69.35541, x_2 = 82.56530, x_3 = -12.10530.$$

$$\therefore y_1 = 9.47772, \quad y_3 = 68.94535.$$

The first values satisfy the problem in question; the second must be rejected as not admissible; while the third values satisfy the problem for the point within the field.

$$\therefore \text{area } ABCD = (x-c)^2 + y^2 = 951.5672 \text{ square chains} = 95.15672 \text{ acres.}$$

When the point is within field, $\text{area} = (x-c)^2 + y^2 = 7468.424 \text{ square chains} = 746.8424 \text{ acres.}$

Also solved by O. W. ANTHONY.

34. Proposed by THOS. U. TAYLOR, C. E., M. C., Department of Engineering, University of Texas, Austin, Texas.

Given a variable parallelogram $ABCP$, where P remains fixed. A moves on an irregular plane curve (closed) and C moves on another irregular plane curve (closed) whose plane is parallel to the plane of (A) curve. The generator PC moves completely around and returns to its initial position, AB always moving parallel to PC , and, of course, returns to its initial position. If distance between planes (A) and (C) = h , show by elementary mathematics and without using theorem of Koppe that volume of solid generated by variable parallelogram $ABCP = \frac{1}{2}h$ (area generated by AP + area generated by BC).

No solution of this problem has been received.

PROBLEMS.

38. Proposed by F. M. PRIEST, Mona House, St. Louis, Missouri.

Suppose two cylindrical iron shafts, each 6 inches in diameter and respectively, 20 and 40 feet in height, are both standing perpendicular at the sea level. They start to fall in still air, how long will it require each one to fall to a horizontal position?

